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10/574,053	03/29/2006	Naoki Yoshinaga	52433/841	7701

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EXAMINER

SHEVIN, MARK L

ART UNIT	PAPER NUMBER
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1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/574,053	Applicant(s) YOSHINAGA ET AL.	
	Examiner MARK L. SHEVIN	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/19/2009 and 12/07/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. Claims 1-8, filed April 14th, 2010, are currently under examination. Claim 1 has been amended and claims 9-14 are cancelled.

Information Disclosure Statements

2. The information disclosure statements (IDS) submitted November 11th, 2009 and December 7th, 2009 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements have been considered by the examiner. Please refer to applicants' copies of the 1449 forms submitted herewith.

Claim Rejections - 35 USC § 103(a)

3. **Claims 1-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yasuhara** (US 6,364,968 B1). The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Yasuhara:

Yasuhara discloses a thin high-strength, hot-rolled steel sheet with a composition (Abstract, col. 4, lines 30-55, and claims 1-4) as shown in the comparative table below:

Element	Yasuhara	Claims 1-2	Overlap
C	0.05 – 0.30	0.030 – 0.10	0.05 – 0.10
Mn	1.5 – 3.5	1.7 – 2.49	1.7 – 2.49
P	0 – 0.02	0.001 – 0.02	0.001 – 0.02
S	0 – 0.005	0.0001 – 0.006	0.0001 - 0.005

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Al	0 – 0.150	0 – 0.060	0 – 0.060
N	0 – 0.02	0.0001 – 0.0070	0.0001 – 0.007
Si	0.03 – 1.0	0.54 – 0.65	0.54 – 0.65
Ti	0.005 – 0.2	0.01 – 0.055	0.01 – 0.055
Nb	0.003 – 0.20	0.012 – 0.055	0.012 – 0.055
Mo	0.02 – 1.0	0.07 – 0.55	0.07 – 0.55
B	0.0005 – 0.004	0.0005 – 0.004	0.0005 – 0.004
Cr	0.02 – 1.0	0.01 – 1.5	0.02 – 1.0
Ni	0.02 – 1.0	0.01 – 2.0	0.02 – 1.0
Cu	0.02 – 1.0	0.001 – 2.0	0.02 – 1.0
Co	n/a	0.01 – 1	n/a
W	n/a	0.01 – 0.3	n/a
Fe	Balance	Balance	Balance

The steel sheets have a microstructure of fine bainite grains at an area percentage of not less than 90% (col. 4, lines 54-56).

The method of producing the sheets includes steps of (col. 5, lines 1-16):

- i) heating a steel slab to a temperature of not higher than about 1200 °C,
- ii) hot rolling the slab at a finish rolling end temperature of not lower than about 800 °C,
- iii) starting to cool a hot-rolled steel sheet within about 2 seconds after the end of the hot rolling step,

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iv) continuously cooling the hot-rolled steel sheet down to a coiling temperature at a cooling rate of about 20 - 150 °C/s, and

v) coiling the hot-rolled steel sheet at 300 - 500 °C.

Tables 3 and 5 disclose inventive steels with TS above 780 MPa, yield ratios between 0.64 and 0.90, $TS \times EI^{1/2}$ of greater than 3320, and $YR \times TS \times EI^{1/2}$ of more than 2320.

Yasuhara does not disclose a maximum value of CTS where $(CE+1.5) KA$ is 0.8 or more.

Regarding claims 1-4, with respect to the amendment to claim 1 changing "...composed of bainite or bainite ferrite..." to "...composed of lower bainite or bainitic ferrite..." and adding "...which constitutes over 85% of the area of the microstructure", while Yasuhara does not specify the subtype of bainite produced in his steels, one of ordinary skill in the art would have reasonably expected Yasuhara's invention to yield lower bainite and in the claimed range of over 85 area% as Yasuhara discloses substantially similar hot-rolled steel sheets of compositions overlapping all the required alloying limitations produced by a substantially similar process as stated above (overlaps the requirements of claim 9) and possessing bainite as the main phase of not less than 90% (col. 4, lines 54-56).

With respect to the overlapping base steel composition of Yasuhara, it would have been obvious to one of ordinary skill in metallurgy to select any portion of the composition ranges, including the claimed ranges, from the overlapping ranges disclosed in Yasuhara because Yasuhara finds that the prior art composition in the

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entire disclosed ranges has a suitable utility and the normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). From MPEP § 2144.05: In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

With respect to the compositional formula " $1.1 \leq 14 \times \text{Ti} (\%) \dots$ ", it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, *In re Cooper and Foley* 1943 C.D. 357,553 O.G. 177., 57 USPQ 1 17, *Taklatwalla v. Marburg*, 620 O.G. 685, 1949 C.D. 77, and *In re Pilling*, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75. In absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those ordinary skilled in the art. *In re Austin, et al.* 149 USPQ 685,688. It would have been obvious to one of ordinary skill in the art to select alloy compositions fulfilling the claimed compositional relationships from the alloy compositional ranges disclosed by Yasuhara.

With respect to the claimed mechanical properties of yield ratio, $\text{TSx}(\text{EI})^{1/2}$, $\text{YRxTSx}(\text{EI})^{1/2}$, and maximum tensile strength, Tables 3 and 5 of Yasuhara disclose inventive steels with TS above 780 MPa, yield ratios between 0.64 and 0.90 (and

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between 0.72 and 0.90), $TSxEl^{1/2}$ of greater than 3320, and $YRxTSxEl^{1/2}$ of more than 2320.

With respect to the maximum value of CTS ((CE+1.5) KA is made 0.8 or more) and the intensity ratio of a {110} plane parallel to the sheet surface at 1/8 thickness, one of ordinary skill in metallurgy would have reasonably expected the prior art of Yasuhara to possess these claimed properties as Yasuhara discloses thin hot-rolled steel sheets of an overlapping base steel composition, produced by a substantially similar process as stated (overlaps the requirements of claim 9). The combination of an overlapping base composition processed by a substantially similar (overlapping) processing method produces the reasonable expectation.

Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

4. **Claims 5-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yasuhara** (US 6,364,968 B1) as applied to claims 1-4 above, in further view of **Marder** (Arnold R. Marder, Effects of Surface Treatments on Materials Performance, in *Materials Selection and Design, Vol. 20 of the ASM Handbook*, (1997), p. 1-10).

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Yasuhara discloses that various surface coatings may be optionally formed on the steel sheet by processes such as hot dipping (col. 13, lines 65-67) however Yasuhara neither discloses a further hot-dip galvanizing nor a galvannealing (alloying) process.

Marder

Marder teaches that steels are often coating with a layer of zinc by a hot-dip galvanizing process to improve corrosion resistance (p. 4, para 1). Marder further teaches that weldability, in particular the spot weldability, of zinc coatings is an important property because most galvanized product is joined using spot welding (p. 6, para 1).

With respect to galvanneal coatings (galvanizing followed by alloying by diffusion in a later annealing stage), formability is important because if the forming operation cracks the zinc coating, corrosion resistance will be lessened (p. 7, para 2). Furthermore, galvanneal coatings offer improved spot weldability and paintability over galvanized coatings (p. 7, para 2).

Regarding claim 5-8, it would have been obvious to one of ordinary skill in metallurgy, at the time the invention was made, to incorporate the hot-dip galvanizing and hot-dip galvannealing coatings of Marder into the steel sheet product of Yasuhara as Marder taught that a galvanized product has increased corrosion resistance and in particular, galvannealed products have improved spot weldability and paintability which would motivated one interested in producing steel

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sheets as these products are usually use in automotive applications as taught by Yasuhara (col. 1, lines 8-15).

Response to Applicant's Arguments:

5. Applicant's arguments filed April 14th, 2010 have been fully considered but they are not persuasive.

Applicants assert (p. 6, para 4 and p. 8, para 1) that the instant specification provides experimental data (i.e. E-1 vs. E-2) to determine the importance of Ti, Nb, Mo, and B on spot weldability.

In response, this is not persuasive for several reasons. While evidence of unobvious or unexpected advantageous properties, such as superiority in a property the claimed compound shares with the prior art, can rebut *prima facie* obviousness, Applicants have not provided such evidence. Applicants have not shown that the differences in results are in fact unexpected and unobvious and of both statistical and practical significance (MPEP 716.02(b) as there is only a highly subjective and qualitative rating of weld quality and no objective quantitative measurements provided instead. Furthermore, such beneficial and/or unexpected results have not been shown to be commensurate in scope with the claimed invention as Applicants have only pointed out comparisons between steels E-1 and E-2 with regards to spot weldability and such a single example of an alloy species to support a broader genus has not been held to be commensurate in scope in the alloy arts (*In re Peterson*, 315 F.3d 1325, 1329-31, 65 USPQ2d 1379, 1382-85 (Fed. Cir. 2003)).

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Applicants assert (p. 7, para 1) that Yasuhara discloses such a large genus of steels (variables) with no indication as to how to select the claimed steels, thus Yasuhara does not render the claimed steels (subgenus or species) obvious, citing *In Re Baird* and *In Re Jones*.

In response, this is not persuasive as Yasuhara clearly (col. 2, lines 30-51) outlines ranges of for each of Ti (col. 7, lines 34-47), Nb (col. 7, lines 34-47), Mo (col. 7, line 60 to col. 8, line 9), and B (col 7, lines 49-59), while is considered to qualify the claimed ranges as a case "overlap or lie inside ranges disclosed by the prior art" under MPEP 2144.05, sections I and II, as thus not rising to the level of such a broad disclosed genus to invoke MPEP 2144.08. Each of Ti, Nb, Mo, and B are considered subgenera are disclosed by Yasuhara and Yasuhara is thus considered to provide not especially broad ranges which invite routine experimentation to discover optimum values.

Applicants assert (p. 7, para 2) that Yasuhara teaches away from the presently claimed invention by its disclosures that only one of Ti and Nb is required in its steels and that Mo and B are both optional and by disclosing examples which do not include all four elements.

In response, Yasuhara discloses that his steels may contain "one or two of Nb: about 0.003 - 0.20 wt% and Ti: about 0.005 - 0.20 wt%" (col. 2, lines 40-45) which also discloses the inclusion of both elements as much as it discloses the use of only one. With respect to the inclusion of Mo and B: While B and Mo is stated as optional, clear conditions and ranges for its inclusion for the purpose of attaining high strength steel

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(col. 7, lines 49-59 and col. 7, line 60 to col. 8, line 9, respectively.) Thus Yasuhara discloses the inclusion of these elements as much as Yasuhara discloses their non-inclusion, which is not considered to be a teaching away as Furthermore, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed.." *In re Fulton*, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004). Yasuhara's failure to disclose a single example including all of Ti, Nb, Mo and B is not considered a teaching away from the claimed steels as disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments (MPEP 2123, section II).

Applicants assert (p. 8, para 2 and 3) that the claimed compositional formula would not have been obvious from Yasuhara as Yasuhara fails to disclose the relation between Ti, Nb, Mo, and B, does not require all four elements to be present, and does not recognize the relation as a result effective variable.

In response, as stated above, Yasuhara discloses the inclusion of Ti, Nb, Mo, and B discloses all four as result effective variables effective for finer and more uniform structure (Ti and Nb: col. 7, lines 34-46), finer structure and suppression of ferrite transformation (B: col. 7, lines 49-59), and delaying transformation after the end of hot rolling to strengthen steel (Mo: col. 8, lines 60-67), and as Applicants have not disputed that Yasuhara's composition overlaps all of the claimed ranges, the instant claims "covers a composition described in the prior art" per *In re Cooper and Foley* 1943 C.D.

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357,553 O.G. 177., 57 USPQ 1 17, Taklatwalla v. Marburg, 620 O.G. 685, 1949 C.D. 77, and In re Pilling, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

-- Claims 1-8 are finally rejected

-- No claims are allowed

The rejections above rely on the references for all the teachings expressed in the texts of the references and/or one of ordinary skill in the metallurgical art would have reasonably understood or implied from the texts of the references. To emphasize certain aspects of the prior art, only specific portions of the texts have been pointed out. Each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combinations of the cited references may be relied on in future rejections in view of amendments.

All recited limitations in the instant claims have been met by the rejections as set forth above. Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121; 37 C.F.R. Part §41.37 (c)(1)(v); MPEP §714.02; and MPEP §2411.01(B).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shevin whose telephone number is (571) 270-3588 and fax number is (571) 270-4588. The examiner can normally be reached on Monday - Friday, 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy M. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Mark L. Shevin/
Examiner, Art Unit 1793

June 22nd, 2010
10-574,053

/George Wyszomierski/
Primary Examiner
Art Unit 1793